

Notice of Allowability

Application No.

10/799,315

Examiner

Kyle M. Riddle

Applicant(s)

TURQUIS, M. PASCAL

Art Unit

3748

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to applicant's amendment received 23 March 2005.
2. ☒ The allowed claim(s) is/are 1,3-9 and 11-16.
3. ☒ The drawings filed on 23 March 2005 are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☐ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Kenneth N. Nigon on 10 June 2005.

The application has been amended as follows:

Claims

2. The claims listed by the amendment received 23 March 2005 have been rewritten as follows:

1. (Currently Amended) Process for controlling the opening and the closing of intake valves of a cylinder of an internal combustion engine comprising a first intake valve and a second intake valve per said cylinder, exclusive of any other intake valve, the first and second intake valves permitting a first and a second intake port, respectively, of the cylinder, respectively, to be closed or opened, and being actuated cyclically in terms of opening and closing, wherein the process comprises the following steps during the closing of the first and second intake valves of the cylinder:

- a first step of closing of the first intake valve,

then a second step of closing of the second intake valve, at a time T after closing the first intake valve, the time, T, between the closing of the first intake valve and the closing of the second intake valve being sufficient to permit propagation toward the second valve of at least one overpressure wave generated in the first port by the closing of the first intake valve;

~~wherein the time T is selected to optimize engine torque at relatively low engine speeds commonly used by drivers.~~

wherein the time, T, is at least equivalent to a time necessary for an acoustic wave to travel over a path between the first intake valve and the second intake valve, using the first and second intake ports.

2. (Cancelled)

3. (Currently Amended) Process in accordance with claim 1 ~~or~~ 2, wherein the value of the time, T, approximately equals:

$$T = (k * 4 * L1 + L1 + L_{int} + L2)/C0 \pm \lambda L1/C0,$$

in which formula

k is an integer,

L1 is a length of the first intake port;

L2 is a length of the second intake port;

Art Unit: 3748

L_{int} is a distance between inlets of the first and second intake ports located opposite the first and second intake valves, respectively;

C_0 is a velocity of sound in a medium contained in the first and second intake ports[l, l];
and

λ is a number between 0 and 1.

4. (Previously Presented) Process for controlling the intake valves of an internal combustion engine in accordance with claim 3, wherein k has a value of 1, 2 or 3.

5. (Currently Amended) Process in accordance with claim 1 or 2, wherein the closing of the first intake valve is actuated close to a mid-course of a piston in the cylinder after top dead center (TDC).

6. (Previously Presented) Process in accordance with claim 5, wherein the openings of the first and second intake valves are actuated approximately simultaneously.

7. (Previously Presented) Process in accordance with claim 5, characterized in that the openings of the first and second intake valves are triggered approximately at the top dead center (TDC) during operation of the engine.

8. (Currently Amended) System for controlling the opening and closing of intake valves of a cylinder of an internal combustion engine comprising first and second intake valves per said

Art Unit: 3748

cylinder, exclusive of any other intake valve, the first and second intake valves being actuated cyclically by actuating devices to close or open first and second intake ports of the cylinder, respectively, wherein the system comprises a central control unit that controls the actuating devices in terms of the closing of the first and second intake valves in such a way as to actuate the closing of the first intake valve and, then, a time, T , after the closing of the first intake valve, the closing of the second intake valve;

~~wherein the time T is selected to optimize engine torque at relatively low engine speeds commonly used by drivers.~~

wherein the time, T , is at least equivalent to a time necessary for an acoustic wave to travel over a path between the first intake valve and the second intake valve using the first and second intake ports.

9. (Currently Amended) System in accordance with claim 8, wherein the time, T , is sufficient to permit propagation toward the intake second valve of at least one overpressure wave generated in the first port by the closing of the first intake valve.

10. (Cancelled)

11. (Currently Amended) System in accordance with claim 8 ~~or 10~~, wherein the value of the time, T , is approximately

$$T = (k * 4 * L1 + L1 + L_{int} + L2)/C0 \pm \lambda L1/C0,$$

in which formula

k is an integer,

L1 is a length of the first intake port;

L2 is a length of the second intake port;

L_{int} is a distance between inlets of the first and second intake ports located opposite the first and second intake valves, respectively, and

C0 is a velocity of sound in a medium contained in the first and second intake ports, and

λ is a number between 0 and 1.

12. (Previously Presented) System in accordance with claim 11, wherein k has a value of 1, 2 or 3.

13. (Previously Presented) System in accordance with claim 9, wherein a central control unit controls the closing of the first intake valve close to a mid-course of a piston in the cylinder after top dead center (TDC).

14. (Previously Presented) System in accordance with claim 13, wherein the central control unit controls actuating devices in such a way as to achieve the openings of the first and second intake valves approximately simultaneously.

Art Unit: 3748

15. (Previously Presented) System in accordance with claim 14, wherein the central control unit controls the actuating devices in such a way that the openings of the first and second intake valves take place approximately at the top dead center during operating of the engine.

16. (Previously Presented) System in accordance with claim 8, wherein the actuating devices are electromagnetic or electromechanical actuating devices.

Communication

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kyle M. Riddle whose telephone number is (571) 272-4864. The examiner can normally be reached on M-F (07:30-5:00) Second Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Denion can be reached on (571) 272-4859. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

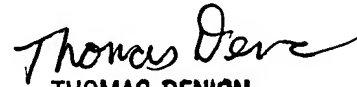
Art Unit: 3748

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Kyle M. Riddle
Examiner
Art Unit 3748

kmr



THOMAS DENION
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3700